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ABSTRACTS

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HortFlora Research Spectrum, 4(3) : (September 2015)

1. Air Pollution Tolerance of Ornamental Trees in an Industrial City

B. M. Bhardwaj^{1*} and Sukhdev Singh^{2*}

¹Horticulture Division, Public Works Department (B&R Branch), Ludhiana.

²Department of Agriculture, Khalsa College, Amritsar.

*E-mail: brijsde@rediffmail.com

ABSTRACT : Deteriorating air quality is peril to human health in urban areas. Vehicular traffic is the major contributor to air pollution in cities. Street trees, being nearest to the source, can effectively reduce pollutants from ambient air. Pollution tolerant species can be more effective in this process with minimal physiological damage to their system. Pollution tolerance of the abundant street tree species in Ludhiana was studied and most of them were found to have intermediate tolerance. 17.27 per cent of the trees were tolerant and 20.4 per cent were sensitive. The most abundant species, *Alstonia scholaris* was sensitive to air pollution and can be used as indicator. More number of pollution tolerant species should be planted in industrial and commercial areas which have higher pollution load.

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2. Ripening and Post-harvest Quality of Dashehari Mango as Influenced by Different Physico-Chemical Treatments During Storage

B. P. Gupta, M.K. Singh*, Mukesh Kumar, S. Malik, Satya Prakash, K.V. Singh and Sanjeev Rao

Department of Horticulture, SVP University of Agriculture and Technology, Meerut (UP)-250 110

*E-mail: singhmk786@yahoo.in

ABSTRACT: An attempt was made during 2011 to study the effect of different physico-chemical treatments on ripening behaviour and post-harvest quality of Dashehari mango with a view to improve storage quality and shelf-life of mango fruits. The experiment was designed under completely randomized design (CRD). Out of ten treatments applied the fruits treated with ethrel 750 ppm had significantly better fruit quality over other treatments in respect of physical parameters i.e., fruit skin colour, flavour/aroma, organoleptic taste, marketability, fruit firmness, specific gravity (0.87), moisture loss (12.54%), decay (3.11 %), total soluble solids (20.40° Brix), sugar content (14.69%), acidity content (0.16%) and sugar/acid ratio (91.81) followed by Ethrel 500 ppm {specific gravity (0.86), moisture loss (13.25%), decay (4.20 %), total soluble solids (TSS, 18.10° Brix), sugar content (14.61%), acidity content (0.18%) and sugar/acid ratio (81.16)}. The post-harvest treatment i.e., pedicellate fruits with ethrel + bavistin (750+1000 ppm) was found to be next best over other treatments in respect of specific gravity (0.86 and 0.83), moisture loss (14.08% and 14.02%), decay (4.80 % and 4.99%), total soluble solids (19.20° Brix and 19.00° Brix), sugar content (13.59% and 13.89%), acidity content (0.19% and 0.18%) and sugar/acid ratio (71.84 and 81.70). Based on results obtained from the present study, it can be concluded that ethrel 750 ppm was found to be best post-harvest treatment on account of physical and chemical parameters of Dashehari mango.

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3. Canopy Structure of Invigorated Guava Plants at Different Heights of Heading Back and Pruning Intensities

J. S. Brar*, H. S. Dhaliwal, M. S. Gill and Savreet Khehra¹

Department of Fruit Science, Punjab Agricultural University, Ludhiana-141 004 (Punjab) India

¹Regional Station, PAU, Abohar (Punjab) India

*E-mail: jsbrar74@pau.edu

ABSTRACT : Significant reduction in vegetative growth with increased severity of heading back was recorded in all years of observations. Although, the vegetative growth of senile (control) trees was remained highest and almost similar in all years of observations, but, among headed back plants, severely headed back (1.5 m) trees exhibited smaller canopies followed by 2.0 m and 2.5 m, respectively. The intensity of pruning also had significant effect on vegetative growth of trees. During the initial years, the canopy volume was decreased with the severity of pruning with minimum canopy volume in trees pruned at 75 % intensity in all levels of heading back. Un-pruned headed back plants exhibited higher canopy volume. The headed back plants exhibited about 50 per cent, 40 per cent and 30 per cent reduction in tree canopy volume in 1.5 m, 2.0 m and 2.5 m headed back trees as compared to un-headed back (senile trees) up to fifth years of rejuvenation, respectively.

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4. Response of Custard Apple cv. 'Arka Sahan' Plants to Integrated Nutrient Management

P. Bhatnagar and J. Singh*

Department of Fruit Science, College of Horticulture & Forestry, Agriculture University, Kota, Jhalarpatan Campus- 326 023 (India).

*E-mail: prerakb_22@yahoo.co.in

ABSTRACT : Response of custard apple cv. "Arka Sahan" plants to integrated nutrient management was carried out at Fruit Research Farm, Department of Fruit Science, College of Horticulture and Forestry, Jhalawar, India during the year 2010-11. Results indicated that different treatments of integrated nutrient sources influenced the growth and development characteristics viz. plant height, number of leaves/plant, number of primary branches/plant, rootstock girth, scion girth, East-West and North-South spread of custard apple cv. Arka Sahan during gestation period. The studies clearly revealed that treatment comprising vermicompost in combination with 50% recommended dose of fertilizer (RDF) and biofertilizers attained significantly higher plant height, rootstock girth, scion girth, plant spread (E-W and N-S), leaf area and soil NPK content over other treatments including control. This treatment combination also resulted in significantly better impact with respect to higher vegetative growth parameters over other treatments including the control. The application of vermicompost along with 50 % N through RDF and biofertilizers provided better nutrition as it contained all the macro and micro nutrients required for growth and development of plants. It also improved physicochemical properties of soil around the treated plants by reducing pH and EC, improving water holding capacity and enriching the organic carbon and the N, P, K status of the soil over other treatments.

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5. Quality Characteristics and Shelf Life Study of Ready-to-Fry Dehydrated Potato Snack Premix

Sukhpreet Kaur and Poonam Aggarwal*

Department of Food Science and Technology, Punjab Agricultural University, Ludhiana-141 004, Punjab

*E-mail: sukhpreetnagra1@gmail.com

ABSTRACT : A technique for development of ready-to-fry dehydrated potato snack premix incorporating potato flour, rice flour and various spices was standardized. The prepared dehydrated potato snack premix was packed in LDPE bags and stored at room temperature for a period of 6 months to study the shelf-life and quality attributes of the prepared product. The physicochemical parameters including ash content, protein content, Free fatty acids and peroxide value of dehydrated premix remained unaffected during storage up to six months with the exception of moisture which increased significantly ($p < 0.05$) during storage. Slight but significant ($p < 0.05$) reductions in bioactive components including total phenolics and total antioxidant activity of dehydrated snack premix occurred during storage. The ready to eat fried potato snack prepared from dehydrated premix was found to be highly acceptable for up to 6 months of storage without any change in sensory quality.

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6. Response of Nutrition on Growth and Flowering of *Dendrobium* Orchids Under Eastern Himalayan Region

Sunil Kumar^{1}, Baggio Ch. Momin² and Niki Dewan²*

¹Department of Floriculture, College of Horticulture & Forestry, Central Agricultural University, Pasighat-791 102, Arunachal Pradesh, India

²Department of Horticulture, North Eastern Hill University, Tura Campus, Tura-794 002, West Garo Hills District, Meghalaya

¹Present address: Department of Horticulture, North Eastern Hill University, Tura Campus, Tura-794 002, West Garo Hills District, Meghalaya

*E-mail: sumu159@yahoo.co.in

ABSTRACT: A study on response of nutrition on growth and flowering of *Dendrobium* orchids under low cost poly house at Instructional farm, Department of Floriculture, College of Horticulture & Forestry, Pasighat, Arunachal Pradesh was conducted during April 2011 to March 2012. Three levels of nutrient mixtures (NPK 19:19:19) viz. 2g/l, 4g/l and 8g/l with commercial micronutrient mixture at 0.2 per cent and four varieties namely, TSG, Sonia, Thongchai Gold and Singapore White were selected for their evaluation. Significant response of nutrition, varieties and their interaction was observed. Cultivar Singapore White showed maximum plant height (65.09cm), number of leaves per cane (10.40), leaf length (19.75cm), cane girth (16.68mm) and minimum internodal space (4.82cm), while, highest number of canes per clump (6.93) and leaf width (6.19cm) was observed with cultivars Sonia and TSG, respectively. Earliness in flowering (93.45 days), increased flower diameter (8.12cm), number of florets per spike (13.57), number of spikes per plant per year (3.24) and fresh weight of spikes (34.07g) was associated with cultivar Sonia. However, cultivar TSG showed increased spike length (45.65cm) and rachis length (30.81cm). Higher dose of nutrition (8g/l) enhanced growth and flowering characters of all varieties as compared to lower dose. In interaction, significant response was noticed with higher dose of nutrition in cultivar Sonia, TSG and Singapore White, respectively.

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7. Morphological Characterization of Tomato (*Solanum lycopersicum* L.) Germplasm in Tarai Region of Uttarakhand

Khushboo Kathayat*, Anita Singh and Monisha Rawat

Department of Vegetable Science, College of Agriculture, G.B. Pant University of Agriculture and Technology, Pantnagar-263 145 (U.S.Nagar, Uttarakhand)

*E-mail: khushboo.pantnagar@gmail.com

ABSTRACT : The present investigation was conducted during 2012 at Vegetable Research Centre, Pantnagar, U.S.Nagar, Uttarakhand. The field experiment was laid out in Randomized Block Design with 29 genotypes along with two checks in three replications. Genetic variability was studied for 17 quantitative characters. The results revealed significant differences among the genotypes for all the characters. High genotypic and phenotypic coefficient of variations were observed for number of fruit clusters per plant (49.84 and 51.16, respectively) and lowest for days to first fruit picking (1.51 and 1.41 respectively). Heritability was found low for days to first fruit picking (0.13%) and high for number of fruit clusters per plant (100%). High genetic advance was observed for 1000 seed weight (484.88) whereas lowest for fruit diameter (0.24). Genotypic correlation coefficient was higher than phenotypic correlation coefficient.

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8. Evaluation of Gladiolus (*Gladiolus grandiflorus* L.) Genotypes Under West Garo Hills District, Meghalaya

Baggio Ch. Momin, Sunil Kumar*, Kalkame Ch. Momin and Niki Dewan

Department of Horticulture, North Eastern Hill University, Tura Campus, Tura-794 002, West Garo Hills District, Meghalaya

*E-mail: sunu159@yahoo.co.in

ABSTRACT : Evaluation of gladiolus cultivars to identify the suitable variety for successful cultivation, flower and corm production under agro-climatic condition of Tura, West Garo Hills district was performed. Twenty two varieties namely, The Queen, Red Majesty, Applause, Charm Glow, Candyman, Interpid, Eight Wonder, Pacifica, Tiger Flame, Souvenir, American Beauty, Oscar, White Prosperity, Wedding Bouquet, Poppy Tears, Morocco Beauty, Summer Sunshine, Wing Wang Sang, Her Majesty, Green Bay, Priscilla and Red Ginger were selected for their evaluation. Uniform size of gladiolus corms (3.00-4.00 cm diameter) were planted on

raised bed following randomized block design with three replications. Uniform package of practices were followed throughout the experiment to grow a healthy crop. Significant response in vegetative, flowering and corm characters was observed in cultivar Candyman followed by Interpid, Eight Wonder, Priscilla, Charm Glow and Wedding Bouquet. Sprouting of corms was advanced in cultivar Interpid (6.67 days) and delayed in cultivar Wedding Bouquet (29.00 days). Highest plant height (97.13cm), number of leaves per plant (9.80) and length of leaf (65.47cm) in cultivar Candyman, while, breadth of leaf (5.27cm) in Wing Wang Sang was recorded. However, earliness in spike emergence (68.58 days) and days to first floret opening (77.53 days) in Eight Wonder, maximum spike length (109.77cm) and rachis length (65.50cm) in Candyman, florets per spike (15.13) in Wedding Bouquet and spike girth (0.90cm) in Priscilla were observed. Enhanced Field life (14.10 days) and vase-life of cut gladiolus flowers under tap water (11.73 days) was observed in cultivar Charm Glow. Whereas, maximum corm weight (93.00g) was noticed with cultivar Candyman followed by American Beauty (75.43g) and Interpid (69.73g).

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9. Effect of Nitrogen Levels and Cuttings (Main and Ratoon) on Growth and Flowering of Golden Rod (*Solidago canadensis* L.) During Summer and Rainy Season Planting

A.V. Barad^{1*}, Nilima Bhosale² and Pooja Maheta³

¹College of Agriculture, Junagadh Agricultural University, Junagarh-362 001, Gujarat

²Deptt. of Horticulture, Agriculture College, Baramati, Pune (Maharashtra)

³Deptt. of Floriculture & Landscape Architecture, J. A. U., Junagarh (Gujarat)

*E-mail: avbarad55@gmail.com

ABSTRACT : The recently introduced under cultivation plant species *Solidago canadensis* L. is commonly known as 'Goldenrod' belongs to family Asteraceae. It is a perennial in nature and unexploited flower crop cultivated in limited areas for its flower stalks. Now a day farmers are growing this crop commercially in a limited area. The trial was conducted to evaluate the nitrogen levels and type of cuttings during two seasons (summer and rainy) with six nitrogen levels (0, 50, 100, 150, 200 and 250 kg N/ha). The nitrogen was applied once during main harvest. Main harvest had pronounced effect on vegetative parameters during summer and rainy plantings except number of suckers and fresh weight of plant, which was higher during both plantings. While earliest flowering (80.20 days) was observed in ratoon harvesting during summer planting. While, under rainy planting the main harvest provided more number of panicles per plant and per hectare. The application of 250 kg N/ha had pronounced effect on vegetative growth parameters which had increased all vegetative growth parameters. Nitrogen at 250 kg N/ha produced highest longevity of inflorescence, yield of panicles per plant and per hectare during summer and rainy planting, respectively Earliest flowering was found at 200 kg N/ha (73.70 days) during summer and at 250 kg N/ha (98.10 days) during rainy season.

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10. Effect of Growing Media and Storage of Stone on the Growth and Development of Mango (*Mangifera indica* L.) Rootstock cv. Local

Supriya S. Gholap and N. D. Polara*

Department of Horticulture, College of Agriculture, Junagadh Agricultural University, Junagadh (Gujarat)

*E-mail : ndpolara@jau.in

ABSTRACT : An experiment was conducted to study the effects of different growing media and storage of stone on mango seedling during 2012-13. Different media mixtures and storage of stones showed significant effect on morphological characters of rootstock. The highest stone germination (74.26 %), stem diameter (6.15 mm), length (27.19 cm) and girth (5.21 mm) of tap root and vigour index (4719.34) was recorded in M₃ (soil + FYM + leaf mould in 1:1:1 proportion) media whereas, stone sown immediately after extraction from fully ripe mango fruit showed the maximum stone germination (94.63 %), stem diameter (6.99 mm), length (31.74 cm) and girth (6.21 mm) of tap root and vigour index (7373.68). However, the treatment M₃S₀ containing mixture of soil + FYM + leaf mould with freshly extracted mango stone from ripe fruits recorded the least time to germination (22.80 days) and maximum plant height (46.60 cm), number of leaves per seedling (18.03), fresh weight of shoot (22.33 g) and root (18.50 g), dry weight of shoot (17.43 g) and root (12.10 g) accumulation

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11. Study on Heritability and Genetic Variability Among Different Plant and Fruit Characters of Tomato (*Solanum lycopersicum* L.)

L. B. Basavaraj*, D. G. Vilas and R. Vijayakumar

Department of Vegetable Science, Kittur Rani Channamma College of Horticulture, Arabhavi- 591218, Karnataka University of Horticultural Sciences Bagalkot, Navanagar-587103 (India).

*E-mail: basulime@gmail.com

ABSTRACT : The present investigation was conducted to elucidate the genetic characters viz. variability and heritability between yield and yield components of different tomato (*Solanum lycopersicum* L.) genotypes. Eighteen genotypes including released varieties, landraces and germplasms were used in this investigation for assessment of quality, yield and yield components. The experiment was conducted during summer; 2013-14 at field of Department Vegetable Science, K.R.C. College of Horticulture, Arabhavi, Belagavi district Karnataka, India. Data on morphological characters were recorded from mean value of five randomly selected plants in each genotype. The genotypes exhibited a wide range of variability for all the characters studied. Analysis of variance showed significant variation among the genotypes for all tested characters. Phenotypic coefficient of variation (PCV) was higher than genotypic coefficient of variation (GCV) for all the characters studied. Days to first fruit maturity showed the highest genotypic and phenotypic variance (3427.10 and 6531.93) whereas TSS (°Brix) showed the lowest ones (0.55 and 0.63). High genotypic variance was observed for most of the characters indicating more contribution of genetic component for the total variation. Genotypic coefficient of variations (GCV) and phenotypic coefficient of variation (PCV) were highest for yield/ha (341.89 and 323.12), whereas the lowest ones were for days to first flowering (5.82 and 7.21). Higher GCV and PVC were recorded for most of the characters indicating higher magnitude of variability for these characters. The highest heritability was recorded for yield/ha (96.34%), while the lowest was for plant height (45.30%). High heritability (broad senses) estimates were observed for all the tested characters indicating that these characters are controlled by additive genes action which can be improved by simple selection.

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12. Study on Genotypic Correlation Coefficient in Dahlia Germplasm

H. M. Singh^{1*}, Uma Shankar Mishra¹ and A. Prasad²

¹Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, Satna-485 334 (M.P.)

²Dept. of Horticulture, C.S.A. University of Agriculture and Technology, Kanpur (U.P.),

*E-mail: hmsingh1983@gmail.com

ABSTRACT : Dahlia is an important bulbous flower crop which has position to increase economic earnings of growers. Forty varieties were grown and studied for genotypic correlation of 16 traits at C.S.Azad University of Agriculture and Technology, Kanpur during 2011-12 and 2012-13. Vegetative and reproductive characters were found to have considerable relationship which also indicated the scope for making improvement in dahlia. Plant height and maximum number of flower per head revealed the sustainable magnitude for crop improvement in dahlia crop.

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13. Studies on the Effect of Bio-Pesticides on Muskmelon Wilt (*Fusarium oxysporum* f.sp. *melonis*)

Surya Narayan^{1*}, Vijai Kumar² and Surendra Singh³

¹Department of Horticulture, K.A.P.G. College, Allahabad, U.P.-(211 001) India

²Department of Horticulture, CSSS (PG) College, Machhra, Meerut-250 106

³LDB, Allahabad

*E-mail: sunara.kapg@gmail.com

ABSTRACT : Five bio-pesticides viz., *Trichoderma*, *Aspergillus*, *Penicillium*, VAM and Biodynamic culture were tried to find out their lethal effects on muskmelon wilt caused by *Fusarium oxysporum* f.sp. *melonis* when applied through soil. *Trichoderma* and Biodynamic culture at 5% concentration (w/w) were effective as these significantly reduced the wilt incidence with improved clinical aspects. Least plumule decay was observed with *Trichoderma* treatment. Similarly, seedling and plant mortality, flower and fruit set and fruit yield parameters were significantly better with *Trichoderma* treatment. Other better results were observed in Biodynamic culture,

VAM, *Penicillium* and *Aspergillus*, respectively. All the treatments were found significantly superior over control. Precisely, muskmelon wilt can be effectively controlled through soil application of *Trichoderma* fungus @ 5% concentration.

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14. Evaluation of Genetic Diversity Using RAPD Markers in *Ocimum*

Rekha Jakhar, S.S. Gaurav and K.K. Singh¹*

Dept. of Genetics and Plant Breeding, C.C.S University, Meerut (U.P.), India.

¹*Bihar Agricultural University, Sabour, Bihar*

**E-mail : drshailendra1975@gmail.com*

ABSTRACT : Sixteen germplasm accessions belonging *Ocimum* (nine *Ocimum basilicum* and seven *Ocimum sanctum*) were subjected to Random Amplified Polymorphic DNA (RAPD) analysis in relation to morphometric parameters for estimating the extent of diversity within and between species. Morphological evaluation of the 16 accessions for selected characters showed qualitative variation among the accessions studied. The RAPD analysis revealed comparable inter and intra species variation. A total of 144 bands amplified, 90.79% was polymorphic and 9.02% was unique to a particular accession which made it distinct from all other accessions. Maximum similarity (0.71) was measured between accession IC-369247 and IC-201233 and least similarity (0.34) was measured in IC-387837 and EC-388896. The RAPD profiles would be useful in genetic improvement and authentication of *species* and genotypes of this medicinally and economically important genus.

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15. Study on the Efficacy of Bioagents on Nodulation of Cowpea (*Vigna unguiculata* L. Walp)

Rashmi Nigam and Joginder Singh¹*

Department of Plant Pathology, Janta Vedic College, Baraut, Baghpat

¹*Department of Horticulture, J. V. College, Baraut, Baghpat*

**E-mail: neelu.nigam@gmail.com*

ABSTRACT : The present investigation was carried out on cowpea variety IFC-901, to study the efficacy of doses of bioagents on nodulation of cowpea (*Vigna unguiculata* L. Walp) in pot condition consecutively for three years. In terms of nodulation status, the pooled data of three year revealed that all the treatments were significantly superior in increasing the nodules/plant as compared to control. Number of nodules was higher when the treatments were given with *Trichoderma species*. *T. harzianum* recorded the best results in increasing the number of nodules against *M. phaseolina*, *R. solani* and *F. oxysporum* infested plants. The study revealed that 15 g dose was most effective for all bioagents.

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16. Effect of Foliar Application of NAA and Microelements on Vigour and Flowering of Marigold (*Tagetes erecta* L.) cv. Pusa Basanti

*Surya Narayan**

Department of Horticulture, Kulbhashkar Ashram Post Graduate College, Allahabad-211 001

Uttar Pradesh (India)

**E-mail : sunara.kapag@gmail.com*

ABSTRACT : Results of the field experiment revealed that vigour of marigold plant was significantly increased due to foliar application of NAA and microelements. The production and size of floral heads were also improved significantly by the NAA and microelement treatments. The spray of 100 ppm NAA at 15 days after transplanting and 0.50% ZnSO₄ at 30 days after transplanting proved significantly effective for yield and floriferousness of marigold cv Pusa Basanti. Minimum plant height was observed in control while the maximum height was recorded by NAA100ppm. Values were in between with the borax treatment. Parameters viz., diameter of main stem, spread of plant along the row, spread of plant across the row, number of primary branches/plant, length of the longest primary branch, number of secondary branches on the highest primary branch, number of leaves on highest primary branch and fresh weight of plant canopy were found to be influenced significantly with treatments and followed same pattern as in case of plant height. It seems that

auxins have great potential to determine plant orientation, flower bud differentiation and economic production.

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17. Correlation and Path Analysis for Growth, Earliness, Yield and Quality Parameters in Chilli (*Capsicum annuum* L.)

Rinchan Dolkar*, M. B. Madalageri and G. Manjunath¹

Department of Vegetable Science, University of Horticultural Sciences,, Bagalkot - 587 103 (Karnataka)

¹Deptt. of Plant Pathology, College of Horticulture, Bagalkot, Karnataka, India

*E-mail: drinchan2012@gmail.com

ABSTRACT : Character association and path analysis in twelve advanced breeding lines of chilli was studied for 16 important traits. The phenotypic and genotypic association of fruit yield was significantly positive with per cent fruit set, number of fruits/plant, number of secondary branches/plant, plant height, fruit weight, total fruit chlorophyll content, pericarp weight and number of primary branches at both genotypic and phenotypic level. However, days to first flowering and days to 50 per cent flowering showed negative and significant correlation with total yield. The genotypic and phenotypic path coefficient revealed that total green chilli yield had high direct positive effect from number of fruit / plant and pericarp weight. So selection done based on number of fruits/plant and pericarp weight would be rewarding.

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18. Effect of PGRs and Inorganic Fertilizers on Vegetative Growth and Flowering Behaviour of Chrysanthemum

Joginder Singh* and Rashmi Nigam¹

Department of Horticulture, Janta Vedic College, Baraut, Baghpat (UP)

¹Department of Plant Pathology

*E-mail: jogi_198224@yahoo.com

ABSTRACT : An experiment was conducted to investigate the effect of PGRs and inorganic fertilizers on vegetative growth and flowering behaviour in chrysanthemum cv. Birbal Sahni and Julia during 2012-13 at Horticulture Research Farm, J V College, Baraut, Baghpat (UP). The three levels of each of GA₃ (100, 200 and 250 ppm) and Cycocel (1000, 3000 and 5000 ppm) and three levels of inorganic fertilizers (F₁: 100 kg N₂ + 60 kg P₂O₅ + 40 kg K₂O/ha; F₂: 150 kg N₂ + 120 kg P₂O₅ + 80 kg K₂O/ha; and F₃: 200 kg N₂ + 180 kg P₂O₅ + 120 kg K₂O/ha) were applied. All the treatments appreciably improved the vegetative growth and flowering attributes of chrysanthemum. Maximum plant height, plant spread, diameter of main stem, number of branches/plant, number of leaves/plant and flowering parameters such as days taken to first flower bud appearance, days taken to flowering, flower size, flower weight/plant and number of flowers/plant were recorded at 150 ppm level of GA₃ and 3000 ppm level of CCC. The inorganic fertilizers also significantly affected the above characters of chrysanthemum.

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19. Jackfruit: A Food of Promise

Jitendra Singh*, P.S. Chauhan, Kavita A., Prerak Bhatnagar and R.R. Meena¹

College of Horticulture and Forestry, Agriculture University, Kota Campus, Jhalarapatan, Jhalwar- 326 023 (Raj.)

¹KVK, Jhalawar

*E-mail : jsingh_rau2s@rediffmail.com

ABSTRACT : The world over there is heavy reliance on three crops—rice, wheat and maize to fulfill dietary energy requirement of the mankind. There are many other crops of promise which can be utilized to share the dominating reliance on these crops. Jackfruit is one of them. Its ripe fruits contain 22.4–24 per cent carbohydrates and are rich source of it. They contain 0.8 per cent mineral matter. The seeds containing 32.6–38.4 per cent carbohydrates are richer than fruits. Their mineral matter content is 1.2–3.5 per cent and are hence better than fruits in this regard. Of the total weight of fruits, pulp constitutes about 30 per cent. It indicates good proportion of edible mass of fruits. The fruits can be hence popularized as one of the food crops

of high utility. It can be grown on marigold soil with less input. It can go as one of the components in agr/horti based farming system under agroforestry.

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20. Prevalence of Leaf Blight Disease Caused by *Phytophthora colocasiae* in Taro in the Aowin Suaman District of Ghana

G. C. Van der Puije¹, F.K. Ackah^{2*} and E. Moses²

¹Crop Science Department, University of Cape Coast- Ghana

²Centre for Scientific and Industrial Research, Crops Research Institute, Fumesua, Kumasi-Ghana

*E-mail : ackah_frank@yahoo.co.uk

ABSTRACT : Studies on the prevalence of leaf blight disease in taro were conducted in the Aowin Suaman District of Ghana. The studies comprised a survey to assess the incidence and severity of the taro leaf blight disease in ten communities in the district in two seasons. It was observed that there was a high incidence (an average of 99% in wet season and 92% in dry season) of the disease in the district and was present in all the surveyed communities. But the disease was not too severe during the period of study (8-25% damaged in both wet and dry season) though there was a significant difference ($P < 0.05$) between the severity in the dry and wet season in the communities.

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21. Assessment of Morphological Variation in Garlic (*Allium sativum* L.) Germplasm Based on Morpho-Agronomic Traits

Mukesh Kumar*

Department of Horticulture, SVPUA&T, Meerut, UP, India 250110

*E-mail : k.mukesh123@yahoo.com

ABSTRACT : An experiment was conducted with 53 garlic cultivars at Horticultural Research Centre (HRC) of SVPUA&T, Meerut, UP, India during the year 2013-14. Results on different growth characters showed that cultivar Roshni Mota exhibited the maximum plant height and Bhima Omkar gave maximum number of leaves per plant while cultivar CL Lamba produced maximum leaf length and cultivar PG-20 resulted in maximum leaf width. In regards to the yield characters, PG-20 gave maximum bulb weight, while Jawa exhibited maximum bulb diameter and clove weight, while cultivar F-2-R gave maximum number of cloves per bulb.

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22. Growth Attributes of Kharif Onion (*Allium cepa* L.) as Influenced by Combination of Organic and Inorganic Nutrients

Joydip Mandal^{1*}, Arun Sharma¹ and Subrata Mandal^{2*}

¹Department of Crop Improvement, Horticulture and Agricultural Botany (CIHAB),

²Rathindra Krishi Vigyan Kendra,

Institute of Agriculture, Visva-Bharati, Sriniketan (West Bengal) – 731 236, India

*E mail: joydip_hort@rediffmail.com

ABSTRACT : An experiment was conducted at the Horticulture Farm of Institute of Agriculture, Sriniketan (West Bengal) to find out the effect of different levels of organic and inorganic nutrients on growth of onion during Kharif, 2014. Seven treatment combinations (FYM, Mustard cake and NPK) were arranged in complete randomized block design with three replications. The data on plant height, number of leaves /plant, leaf length, leaf diameter, neck length and neck diameter were recorded at 30, 60, 90 and 120 days after transplanting. Different combinations of organic and inorganic nutrients had significant influence on different growth attributes. Treatment combination of 20 t/ha FYM + State recommended NPK (125-100-100 kg/ha) was performed better than others in all the growth parameters, except neck length.

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23. Response of NPK Fertilization on the Growth Performance of Tuberose (*Polianthes tuberosa* L.) cv. Single

G. R. Kishore*

Department of Horticulture, C.C.R.(P.G.) College, Muzaffarnagar -251 001 (U.P.), India.

*E-mail: drgrkishore@gmail.com

ABSTRACT : A field trial with three levels of each of nitrogen, phosphorus and potash (50, 100 and 200 Kg/ha) by following a randomized block design was carried out at C.C.R. (P.G) College, Muzaffarnagar on tuberose cv. Single. The results revealed that application of higher dose of nitrogen resulted in profuse growth, while the doses of phosphorus and potash could not show significant differences in traits studied. Therefore, a fertilizer dose of 200kg, 100kg and 200 kg/ha of nitrogen, phosphorus and potash, respectively may be recommended for profitable cultivation of tuberose.

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